

**UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK**

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In Re: Methyl Tertiary Butyl Ether (MTBE)
Products Liability Litigation

Master File No. 1:00-1898
MDL 1358 (SAS)
M21-88
ECF Case

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This document relates to the following case:

City of New York v. Amerada Hess Corp., et al.
Case No. 04 Civ. 3417

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**PLAINTIFF CITY OF NEW YORK'S OPPOSITION TO DEFENDANTS' TRIAL
MEMORANDUM FOR PHASE II**

Plaintiff the City of New York (the "City") hereby submits its Opposition to Defendant's¹ Trial Memorandum for Phase II of this trial. The City will prove in Phase II that it is more likely than not that, absent treatment, MTBE still will be in the ground or water of station 6 in 15 years.² The City will do this, in part, though the testimony of expert David Terry, who uses numerical groundwater models to predict levels of future MTBE contamination in Station 6. Groundwater modeling is a well known method of predicting future contamination in water and has long been accepted by federal courts. Mr. Terry is qualified expert whose opinions are reliable and relevant to the issues in Phase II and the case generally.

I. ARGUMENT

"Numerous courts have validated water modeling techniques" (Sterling v. Velsicol Chemical Corp., 855 F.2d 1188, 1199 (6th Cir. 1988))

A. Defendants Narrow Focus on David Terry Ignores Numerous Other Evidence in Phase II

¹ We will refer to the three remaining corporate defendants collectively as "ExxonMobil" or "Defendant."

² The proper burden of proof in this phase is preponderance of the evidence, as noted in Plaintiff's Proposed Jury Instructions filed in 00-1898 Dkt # 2545 (June 15, 2009). As noted in the City's Objections to Defendant's Phase II Jury Instructions and Verdict Sheet, it is erroneous to require the City to tie proof of the presence of MTBE to specific wells because it is contrary to the Court's instructions for Phase II and does not make sense as a practical matter. Phase II goes to the persistence of MTBE, rather than the specific impacts on the City's wells. For instance, suppose (using the Court's backup generator analogy) the City builds Station 6 (per Phase I) but it's never turned on because it's not needed, or it's turned on later than the City's experts have assumed in their modeling exercises. If MTBE is still in the "ground or water" the City still should prevail in Phase II, regardless of whether MTBE has been drawn into the well(s) -- which depends on when Station 6 is built and how the wells actually operate. The treatment facility treats the combined influent from all the Station 6 wells. Even assuming Defendant were correct that the issue were wells as opposed to ground or water (which Defendant is not), the focus would still be on the need for the treatment facility -- which just means that MTBE is entering via one or more wells, not "each".

Defendant narrowly focuses on the modeling performed by David Terry and presumes that his modeling will be the sole basis of the City's offer of proof in Phase II. While Mr. Terry's modeling is an important component of Phase II, Defendant has completely ignored an extensive amount of factual evidence that the City will present to demonstrate that (i) MTBE is currently present in and around Station 6; (ii) the source of this MTBE is known and unknown releases from USTs used by commercial gasoline stations; (iii) the remediation at these gasoline stations has been generally unsuccessful in addressing MTBE contamination; and (iv) MTBE does not biodegrade and persists in groundwater. The City will prove these facts using, among other things, the site remediation files produced by Defendant, studies by governmental entities, statistical data, testimony from the former head of New York State's spill remediation program for New York City, and expert testimony from individuals with years of experience on site remediation, underground storage tanks, and the chemical properties of MTBE. Therefore, the Defendant's myopic focus on Mr. Terry is not only without merit, it also fails to address the majority of proof to be presented by the City in Phase II.

B. Groundwater Modeling is a Reliable and Court-Approved Method of Predicting Future Contamination

A numerical groundwater model is a computerized representation of the flow and transport characteristics of the subsurface environment that is typically used by hydrogeologists to simulate and predict the response of an aquifer system to a set of specified stress conditions. Models typically are used to simulate both the flow and movement of ground water in an aquifer system, as well as the transport of dissolved materials that may be present within the groundwater. The use of ground water models for these purposes has been well established within the field of hydrogeology for more than 40 years.

Numerous courts have validated water-modeling techniques to predict past and future levels of contamination in drinking water. *See United States v. Dico*, 266 F.3d 864, 869-70 (2001) (approving admission of plaintiffs' expert hydrogeologist's MODFLOW-based computer model studying the capture zones of remediation wells); *Sterling v. Velsicol Chemical Corp.*, 855 F.2d 1188, 1199 (6th Cir. 1988) (holding that the trial court did not err in admitting plaintiffs' experts groundwater computer models); *New Mexico v. General Electric Co.*, 335 F.Supp.2d 1266, 1280-89 (D.N.M. 2004) (explaining that expert's groundwater flow computer modeling was generally known and accepted in the geostatistical community as reliable). The Second Circuit has approved of computer modeling in other circumstances. *See Perma Research & Development v The Singer Co.*, 542 F.2d 111, (1976) (holding that trial judge in a patent case did not abuse its discretion in allowing testimony of experts who used computer simulations).³

Important to the courts approving computer models of groundwater contamination are that the experts carefully devise, calibrate and test their model based on available physical data and that the model is properly conceived and constructed. *See, e.g., Velsicol*, 855 F.2d at 1199 (noting with approval that plaintiffs' experts carefully devised, calibrated and tested their model based upon physical data).

C. David Terry is a Qualified Expert and His Opinions on Future MTBE Contamination Are Reliable

Defendant attacks Mr. Terry's opinion on several grounds, e.g., that Mr. Terry used an incorrect source term, that his water level calibration is incorrect, and that the model does not

³ Defendant features a pull-out quote from the *Perma* case in large font on the second page of its brief, but does not properly attribute the quote to the dissent. *See Perma*, 542 F.2d at 121-22. As noted above, the Second Circuit approved of the use of computer simulation by experts in that case. *See id.* at 115-16. The statement used by defendant exhorting that "simulation is make believe" is the opinion of a lone dissenter in that case, who, apparently, was a technophobe. *See id.* at 121-22.

generate results that were observed in the real world, but such disagreements among experts are for the jury to resolve at trial. *See Dico*, 266 F.3d at 871 (‘the sufficiency of the factual basis for [expert’s] [theory] was open to any challenge [the Defendant] wished to mount on cross-examination, but that sufficiency was not a basis for excluding the expert’s testimony altogether.’). Furthermore, Defendant’s Phase II trial memorandum is not the appropriate context for a *Daubert* challenge to Mr. Terry’s opinions and Defendant did not make a timely *Daubert* challenge following Mr. Terry’s deposition. Nonetheless, Mr. Terry would survive such a challenge, because he is qualified expert and his opinions are relevant and reliable. *See Daubert v. Merrell Dow Pharmaceutical, Inc.*, 509 U.S. 579 (1993).

The Supreme Court in *Daubert* held that the trial judge, in considering the admissibility of expert evidence under Rule 702, must ensure that the evidence is both reliable and relevant. 509 U.S. at 597; *see Lamela v. City of New York*, 560 F. Supp. 2d 214, 224 (E.D.N.Y. 2008). In this regard, the trial court functions as a ‘gatekeeper.’ *Daubert*, 509 U.S. at 597; *see Celebrity Cruises, Inc. v. Essef Corp.*, 434 F. Supp. 2d 169, 175 (S.D.N.Y. 2006). In that gatekeeper role, the Court must first determine whether the expert has the requisite qualification to testify competently regarding the matters he intends to address. *Zaremba v. General Motors Corp.*, 360 F.3d 355, 360 (2d Cir. 2004). ‘If an expert lacks the requisite qualifications, any analysis of the reliability of their methods by the court is superfluous.’ *Lamela*, 560 F. Supp. 2d at 224 (internal quotation marks and citations omitted).

Mr. Terry’s education and experience underscore that Mr. Terry is qualified to be an expert in this case. *See, e.g., Velsicol*, 855 F.2d at 1199 (holding that the trial court did not err in admitting plaintiffs’ experts groundwater computer models). He is a professional hydrogeologist and senior Vice President of the ground water consulting firm Leggette, Brashears & Graham,

Inc. Mr. Terry has a Bachelor's Degree in geology from Syracuse University and a Master's Degree in Geological Sciences from the State University of New York at Binghamton and has more than 20 years of experience in ground-water supply and contaminant hydrogeology. He is a licensed professional Geologist in the states of North Carolina and Pennsylvania. He has performed and supervised a number of ground-water contaminant transport numerical modeling assessments in a variety of hydrogeologic environments including the Upper Glacial Aquifer of Long Island. Finally, Mr. Terry has evaluated and modeled MTBE transport for a number of contamination projects, and has assessed the impact of discharges of MTBE on public supply wells.

The City asked Mr. Terry to provide opinions and testimony on the potential future MTBE impact that could be expected to occur in the future at the Station 6 well-cluster (wells 6, 6A, 6B, 6D, and 33) and in five individual wells selected by Defendant (wells 5, 22, 26, 39, 45) to provide an appropriate basis of design for potable water treatment at those locations. (*See* Declaration of David B. Terry filed in 04-3417 Dkt. # 103 (April 23, 2009) ("Terry Decl.") at ¶ 3.)

Mr. Terry employed standard hydrogeologic methodologies to assess future concentrations of MTBE. (*See* Terry Decl at ¶ 5.) First, he conducted a numerical modeling simulation based on actual ambient groundwater data collected in the Station 6 capture zones ("Analysis 1"). *See id.* at ¶ 6. Then, he conducted a separate numerical modeling simulation based on known releases of petroleum sites in the Station 6 capture zone ("Analysis 2"). (*See id.*) These two analyses were both performed using the numerical groundwater modeling code known as MT3DMS, a modular three-dimensional multispecies transport model for simulation of advection, dispersion and chemical reactions of contaminants in groundwater systems, developed

by the University of Alabama for the US Department of Defense. All numerical transport modeling was performed in MT3DMS on the TMR model grid.⁴ As further detailed in Mr. Terry's report, Mr. Terry calibrated his data by adjusting the dispersivity values (a key hydrological parameter of contaminant transport) to ensure that it best predicted real world data.⁵

Based on the results of these simulations, which are set out in his initial report, Mr. Terry concludes that MTBE concentrations at Station 6 when it is reactivated will, more likely than not, reach a peak concentration of 35 parts per billion (ppb) and that concentration of MTBE will remain over 3ppb until at least 2040.

More specifically, Mr. Terry's opinions with respect to Station 6 are:

- 1) The gasoline additive MTBE is present in the groundwater within the future capture zone of the wells that will supply water to Station 6. Some of the MTBE present today within the aquifer system will be intercepted by the Station 6 wells in the future when the use of this water supply is resumed in 2016.
- 2) The primary source of the MTBE present in the aquifer system tapped by Station 6 is gasoline leakage and discharge from gasoline stations and refueling systems present within the Station 6 capture zone area.
- 3) Based on the distribution of known MTBE concentrations within Station 6 capture zone, Terry made projections of the potential future migration and distribution of dissolved MTBE in ground water using a computerized numerical transport model (Analysis 1). The results of his projection indicate that the MTBE concentrations at Station 6 when it is reactivated will, more likely than

⁴ With respect to defendant's five wells, Mr. Terry conducted a modeling analysis using the ATRANS analytical model. While none of the five defendant's wells is currently pumping, each defendant focus well is included in the City's current water supply permit and is available for operation at any time if needed, such as in a drought. Because the purpose of Mr. Terry's analysis was to provide a basis for the design of a treatment system at these wells, Mr. Terry utilized a standard Well Head Protection Area (WHPA) approach to assess potential MTBE concentrations at these wells, which assumes that each well is pumped in a steady state condition beginning in the year 2009. Based on this analysis, Mr. Terry concluded and continues to conclude that, for the purpose of establishing an appropriate treatment process, it would be reasonable and prudent for the treatment plant design engineer to expect and anticipate that the MTBE concentrations could remain at or above 3 ppb at Well 5 until 2027, at well 22 until 2035, at well 39 until 2020 and at well 45 until at least 2040.

⁵ One important factor to understand is that Mr. Terry's model was based on several pre-existing models that had already undergone calibration. Thus, defendant's argument that Mr. Terry did not properly calibrate the model simply misses mark.

not, reach a peak concentration of 35 ppb, and that the concentration of MTBE will remain at or above 3 ppb until at least 2040.

- 4) Based on the information that is available concerning discharges in the Station 6 capture zone, and by making reasonable assumptions about the volumes of gasoline discharges, the timing of the releases and the migration of MTBE from these discharges to the underlying groundwater, Mr. Terry performed an additional modeling of future potential impacts at Station 6 (Analysis 2). From the assessment, Mr. Terry concluded that MTBE concentration, will more likely than not remain at or above 3 ppb until at least 2040.
- 5) Mr. Terry concludes that Engineers designing a treatment process for Station 6 should take the above projections into account when developing an appropriate design goal for the system, but that appropriate safety factors and engineering judgment should also be exercised to reflect the possibility of additional sources of MTBE mass that may be present that were not accounted for in this analysis.

Mr. Terry submitted a rebuttal report to respond to various criticisms of Defendant's experts but, after meticulously considering each factor raised by Defendant's experts, concluded that his opinions set out in his initial report remain unchanged. (*See* Terry Decl. at ¶¶ 8-10)

Defendant cannot validly dispute that Mr. Terry's opinions are relevant to the issues in Phase II and this case generally. Evidence "having any tendency to make the existence of any fact that is of consequence to the determination of the action more probable or less probable than it would be without the evidence" is relevant. *See* Fed. R. Evid. 401 (emphasis added). In order for evidence or testimony to be relevant, "it must relate to an issue in the case or be sufficiently pertinent to a material fact in the case." *See Allstate Ins. Co. v. Gonyo*, 2009 WL 1212481, *3 (N.D.N.Y April 30, 2009). Mr. Terry opines on the levels of future MTBE contamination in Station 6 and Defendant's focus wells. Such information is integral to Phase II, in which the jury will be asked specifically about whether, absent treatment, MTBE still will be present in the ground or water of Station 6 in 15 years, and the case generally.

Similarly, Defendant cannot validly dispute that Mr. Terry's opinions based on his groundwater models are reliable. *See, e.g., Dico*, 266 F.3d at 869-70 (approving admission of

plaintiffs' expert hydrogeologist's MODFLOW-based computer model studying the capture zones of remediation wells); *Velsicol*, 855 F.2d at 1199 (holding that the trial court did not err in admitting plaintiffs' experts groundwater computer models); *New Mexico*, 335 F.Supp.2d at 1280-89 (explaining that expert's groundwater flow computer modeling was generally known and accepted in the geostatistical community as reliable). Mr. Terry's models are properly constructed and conceived with code that is standard in the industry. Indeed, Mr. Terry made use of MT3DMS code and MODFLOW data, both of which are approved by the industry and government agencies. *See Dico*, 266 F.3d at 870-71 (the model itself passes scrutiny under Daubert. Known as MODFLOW, the model is sanctioned by the EPA and is considered a standard model that is acceptable and commonly used by hydrogeologists). Indeed, the model used by Mr. Terry as the basis for his simulation was developed using a pre-existing USGS model of the aquifer system and its hydrogeologic attributes. He also calibrated the model and checked his results against real world data.

Finally, in his exhaustive rebuttal report, Mr. Terry considered each of the critiques of his methodology leveled by Defendant's experts and concluded that these did not affect his opinions. *See Dico*, 266 F.3d at 871 (noting with approval that plaintiff's expert considered each piece of data the defendant alleged it ignored). Indeed, the critiques of his models by Defendant's experts indicate that the models were susceptible to testing by Defendant's experts. All of these factors support the reliability of Mr. Terry's opinions.

CONCLUSION

For the foregoing reasons, this Court should disregard Defendant's trial memorandum in its entirety. The proper burden of proof in Phase II is preponderance of the evidence. Mr. Terry is a qualified expert whose opinions are reliable and relevant. The City will prevail in Phase II

by proving that it that more likely than not that, absent treatment, MTBE still will be in the ground or water of station 6 in 15 years.

Dated: San Francisco, California

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